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To the FAA under the email address provided for public response

Comments on FAA Programmatic Environmental Assessment SpaceX

My family and I have owned property at Boca Chica village since 1987.

I share the concerns raised in the following paragraphs. It is clear that the FAA has not monitored compliance, nor sought input from affected stakeholders.

In addition to the issues raised below, two personal reflections. The traffic situation has been appalling with wildlife destroyed by careless late night drivers, and state highways and private roadways ruined by reckless use of unsuitable vehicles, as well as at least one human fatality. Second, the environmental impact is not confined to large-scale depredations and burn-offs, but also to disregard for public and private property on a small scale. Only the past two years have I had to clean my property of plastic bottles, cans, and other debris: SpaceX personnel and workers have shown no respect for anyone's property but their own.

The FAA's public announcement that they are "in the beginning stages of conducting an environmental review" is a misstatement of fact. The FAA actually began their review in February 2020 and had a partial Draft Environmental Assessment done in May 2020. Furthermore, the FAA has allowed SpaceX to determine which level of new environmental review is needed, a violation of the National Environmental Policy Act (NEPA) and FAA's own written NEPA-implementation policies, per the U.S. Department of Transportation, Federal Aviation Administration Order 1050.1F.

First, we very strongly urge the FAA to do the more thorough Environmental Impact Statement rather than an EA. The actions of SpaceX are now significantly different and greater in scope than the original project the FAA authorized in its 2014 Record of Decision (ROD). We contend that these actions have, and will continue to have, increasingly more significant human and environmental impacts.

The SpaceX project that the FAA authorized in 2014 was to allow the permitting of up to 12 launches of the Falcon 9 and Falcon Heavy rockets per year, and "smaller reusable suborbital launch vehicles." The SpaceX footprint in the area was limited; a 21-acre launch site and two launch control sites approximately 2 miles away. The project now is much larger and different in purpose and scope. This is particularly important as the SpaceX sites are essentially (except for a few small private inholdings) surrounded to the south and the west by the Boca Chica Unit of the Lower Rio Grande Valley National Wildlife Refuge, to the north by Boca Chica State Park and South Bay (the first Texas Coastal Preserve), and to the east by Boca Chica Beach and the Gulf of Mexico. *Biologically this is a very productive and sensitive area, with one of the highest levels of plant and animal diversity of any national wildlife refuge in North America, and with more federally and state listed endangered, threatened, rare, and species of concern than any other refuge*. The following is a list of proposed SpaceX actions that were not part of their 2014 EIS, all of which are adding additional environmental impacts and therefore warrant a new EIS. They include but are not limited to:

1. The development, fabrication and testing of an entirely new rocket (Starship/Super Heavy) which will be the largest and most powerful rocket ever built, using 50% more fuel that the Saturn V, fuel that is more volatile and explosive (liquid oxygen and liquefied methane) than that of the Falcon 9 and Falcon Heavy, on which the 2014 EIS was predicated.
2. SpaceX's manufacturing and production facilities were not part of the 2014 EIS, and their overall environmental "footprint" of both the Launch Control Center Area (LCCA) and the Vertical Launch Area (VLA) has expanded greatly. VLA personnel has gone from "30 to 100" in 2019 to

450, with 24/7 lighting and activity. This is occurring in an area surrounded by state park, national wildlife refuge, public beach, and endangered & threatened species and critical habitat.

3. The 2014 EIS and ROD allowed for up to 12 launches per year of the Falcon 9 or Falcon Heavy, rockets already tested and in use. The new SpaceX plan calls for the following:
    a. 10 Super Heavy static fire engine tests per year. Super Heavy has 37 raptor engines.
    b. 50 Starship static fire engine tests per year. Starship has up to 6 raptor engines.
    c. 20 Starship suborbital flights per year.
    d. 8 Starship/Super Heavy orbital launches per year.
    e. And quoting the May 2020 FAA Draft EA, "As flight tests become more successful SpaceX anticipates increasing orbital launch events…" meaning that testing and launch frequency of events are open-ended.
4. Not included in the 2014 EIS was the present plan to drill 5 natural gas wells, to then collect, purify, liquefy (liquefied natural gas), store and use the methane. At 5.5 acres each, and adjacent to state and federal wildlife refuge land, the impacts and potential hazards of these operations in themselves warrant an EIS.
5. A desalination plant.
6. SpaceX plans to vent methane into the atmosphere, both from its facilities and from its launch vehicles. There was no mention of methane in the 2014 EIS. Now there will be methane production, storage and fuel. Will the methane fuel be piped in, trucked in, or produced onsite? What will be the cumulative greenhouse gas (GHG) emissions from the testing, launching, burning and venting of methane and other fuels?
7. SpaceX plans on greatly increasing closures, (from 180 hours/year to 500 hours/year) of the entire area which includes much of State Hwy 4, Boca Chica beach, Boca Chica State Park, the Boca Chica Unit of the Lower Rio Grande Valley National Wildlife Refuge, South Bay Coastal Preserve, and Palmito Ranch National Battlefield. These are public lands and are not to be de-facto privatized. Further, *we note that SpaceX has already exceeded the 180 hours/year (over 180 hours in just one month, March 2020), without any apparent enforcement effort by FAA.*
8. There was no launch failure safety analysis in the 2014 EIS that included a rocket of Starship/Super Heavy in size.
9. There was no environmental analysis of possible impact on South Bay Coastal Preserve of a rocket coming down (whole or in pieces) with up to 5,200 metric tons of rocket fuel. The consequences could be catastrophic and unmitigable.
10. There was no cumulative impact analysis that included the three permitted liquefied natural gas export terminals within 5 miles of the launch site, including larger debris field, greater and more frequent explosion & fire risks, greater noise, light, vibration, sonic booms, and release (intentional or accidental) of hazardous fuels and vapors. What will be the risks to South Padre Island, Port Isabel and Long Island Village, 5 miles away? Cumulative impact analysis also needs to evaluate safety of the Jupiter LLC plan for a light crude refinery and offshore oil terminal.
11. The vastly greater amount of traffic-related wildlife mortality on Highway 4, fourteen miles of which is surrounded on both sides by national wildlife refuge. 11,000 dump trucks have already moved material from Southmost to the VLA for building up the launch site base, causing impacts to Hwy 4, refuge fences due to vehicle crashes, and wildlife mortality from traffic volume. Traffic volume continues to be excessive due to continuous construction that was never evaluated in the NEPA process.
12. Significant decline in Snowy Plover nests (federally threatened species) in the mud flats around the VLA in 2020, the first year of significant SpaceX testing and launching. Other wading and shorebird species are also at risk (e.g., Piping Plover, a federally endangered species), as are migrating passerines that "fall out" in the area during weather events.

13. Possible deleterious effects of the dramatic increase in number and size of static engine testing and launches on sea turtles and their nesting on Boca Chica beach, particularly the critically endangered Kemp's Ridley.
14. The 2014 EIS is approximately seven years old.
15. Unlike an EA, an EIS guarantees maximum public input and participation

The FAA's NEPA procedures implementing the National Environmental Policy Act define when a Supplemental EIS is needed, or not. By all three criteria the new and expanded SpaceX plan warrants an EIS. The following was cited in the FAA's 2014 SpaceX EIS. [FAA Order 1050.1F, Section 9-2] "**A Supplemental EIS is not needed if:**

1. **"The proposed Action conforms to plans or projects for which a prior EIS has been filed and there are no substantial changes in the Proposed Action that are relevant to environmental concerns."**

   SpaceX has in fact never launched a Falcon 9 or Falcon Heavy rocket from Boca Chica and now has no plans to do so. It has instead turned its site and activities into something unrecognizable in the original EIS and ROD; a large and expanding complex to manufacture, fabricate, assemble and test the Starship/Super Heavy rocket. These are substantial changes not addressed in the Proposed Action.

   The Starship and Super Heavy booster together will be larger than the approved Falcon 9 and Falcon Heavy by an order of magnitude, standing 39 stories tall, with nine million lbs. of propellants, nearly 50% more than NASA's Saturn V rocket used to launch moon-landing Apollo missions.

   Round-the-clock experimental testing has already increased significantly SpaceX's footprint by enlarging its acreage, its number of buildings, its number of employees and contractors, its hours of beach and refuge closure, and its number of test firings and pressure tests. All these things significantly increase environmental and public use impacts and none them are in the original EIS.

   In addition, in the short time since SpaceX has conducted operations at the Boca Chica site, there have been multiple accidental explosions that disrupted people's lives, scattered rocket debris and caused wildfires that have consumed more than 100 acres of native habitat on national wildlife refuge land. These serious impacts are likely to continue to occur and illustrate how critical it is for the FAA to initiate a new EIS process, and for federal regulators to exercise meaningful, legally required oversight. There are major and unanticipated changes from the activities proposed in the 2014 EIS because no testing of engines for the Falcon rocket family was planned or needed. Now, with the development of raptor engines, Starship and Super Heavy, testing will be frequent and accidents to some degree will continue. Impacts are now much more significant.

2. **"Data and analysis contained in the previous EIS are still substantially valid and there are no significant new circumstances or information relevant to environmental concerns and bearings on the Proposed Action or its impacts."**

   The construction, testing and firing of the massive Starship and Heavy Booster will have much greater impacts. Because of the very substantial changes to the actions taking place at this site, virtually all the impact analysis in the 2014 EIS is now out of date, inaccurate and misleading.

   Specifically, new analysis needs to be prepared for the significant effects that are occurring, such as noise, light, frequency of events, fires & explosions, larger areas of direct and indirect impacts (likely to include the towns of South Padre Island, Port Isabel, Long Island Village.

   The permitted liquefied natural gas (LNG) liquefaction export terminals on the Brownsville Ship Channel), the storage of much more rocket propellant that is more volatile and explosive,

impacts to wildlife, wetlands, vegetation and endangered and threatened species, and public access to recreation, South Bay, Palmito Ranch Battlefield Site, and Boca Chica beach all require a new and more complete analysis. In other words, an EIS is necessary.

Under economic impacts another issue is missing entirely. The latest license for the Starship tests requires $198 million in third party liability, and federal indemnification for losses beyond that. This is higher than is required for any Falcon 9 or Falcon Heavy launch from Vandenberg AFB or Kennedy/Cape Canaveral, suggesting a far larger risk zone than was included in the EIS or ROD. And this probably doesn't include liability for the potential $20 billion LNG terminals and LNG tankers that will likely be in the expanded risk zone.

3. **"All pertinent conditions and requirements of the prior approval have, or will be, met in the current actions."**

The FAA has done an inadequate job in ensuring SpaceX compliance with many of the conditions in its 2014 Record of Decision. An example is the closure of Highway 4 and Boca Chica beach, which was to be limited to no more than 180 hours per year. In just the past 3 months of this year closures have exceeded 225 hours, often with confusing and inadequate prior notifications and last-minute changes and revocations. Nevertheless, SpaceX now wants to nearly triple its beach closure "quota."

To increasingly deny access to eight miles of public beach, state park land, national wildlife refuge & national park is a significant human impact and needs to be addressed, particularly as much of the experimental engine and rocket testing could be done at a safer and less public testing location elsewhere.

Given the wholly different purpose of the project, FAA needs, as part of the Supplemental EIS, to revisit the alternatives evaluation. Alternatives should include 1) launching and re-landing Starship & Heavy Booster on floating offshore platform off the South Texas coast, a possibility Elon Musk has publicly mentioned and for which job positions have been listed, and 2) launching Starship/Heavy Booster from Cape Canaveral, and re-landing on an offshore platform, a technology which was developed by SpaceX and used often for its Falcon 9 rocket. NASA supports SpaceX using Kennedy Space Center Launch Complex 39-A for Starship/Super Heavy.

FAA's May 2020 Draft EA states, under Alternatives, "Constructing a new site for Starship/Super Heavy would result in extensive environmental impacts, and so was not analyzed further." "Extensive environmental impacts" is an apt description of what SpaceX is doing to Boca Chica.

One further scoping recommendation. The FAA needs to delineate a clear and unambiguous enforcement mechanism to ensure compliance with whatever mitigation measures are required. Given its role in facilitating the U.S. space program, the FAA appears ill-suited or unwilling to the task of ensuring that environmental resources are respected and protected. FAA enforcement of the 2014 ROD conditions was marginal at best. Because SpaceX's impacts are certain to be significant, an Environmental Assessment is insufficient. A new EIS with a vigorous public input process is not just warranted by NEPA and the FAA's own criteria; it is <u>required</u> and urgently needed. Until that is done the FAA should prohibit any expansion in either SpaceX's footprint or testing and launching activities at the Boca Chica site.

Respectfully submitted,

Electronically signed by
Thomas Gerleman